PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

SUPPLEMENT D: COMMUNITY CONTAINMENT MEASURES, INCLUDING NON-HOSPITAL ISOLATION AND QUARANTINE

Goals

- Reduce the risk of exposure to SARS by separating and restricting the movement of persons suspected to have SARS
- Reduce the risk of transmission of SARS-CoV by restricting the movement of persons who may have been exposed to infectious SARS patients but are not yet ill.
- Reduce the overall risk of transmission of SARS-CoV at the population level by limiting social interactions and preventing inadvertent exposures.

Key concepts

- Tracing and monitoring of contacts of SARS patients is resource intensive yet critical for containment and early recognition of illness in persons at greatest risk of becoming infected and transmitted infection to others.
- Isolation and quarantine are standard practices in public health; both aim to control exposures to infected or potentially infected persons, and both raise legal, social, financial, and logistical challenges that should be anticipated and addressed.
- Isolation applies to people who are known to have an illness, whereas quarantine applies to those who may have been exposed to an illness but are not ill.
- Quarantine is a collective action for the common good. Modern quarantine must be designed not only to prevent disease transmission in the community but also to ensure prompt delivery of medical care and support to exposed persons and protect individual civil liberties.
- Quarantine was an integral part of SARS control in some settings with extensive transmission and can be implemented in various ways depending on specific needs.
- Quarantine does not have to be mandatory, and compliance does not have to be 100% for the measure to be effective.
- Effective implementation of quarantine requires a clear understanding of the roles and legal authorities of public health staff at local, state, and federal levels and cooperation and collaboration with traditional and non-traditional partners.
- Obtaining and maintaining public trust is key to successful implementation of these measures. Clear messages about the criteria, justification, role, and duration of quarantine and ways in which persons will be supported during the quarantine period will help generate public trust.
- Measures such as cancellation of public events or the implementation of community "snow-days" can reduce the risk of exposure to SARS at the population level by limiting social interactions and preventing inadvertent exposures.

Priority activities

- Isolate SARS patients and suspects in homes, hospitals, or designated community-based settings.
- Monitor contacts of SARS cases, and consider quarantine of contacts if needed.
- Implement community-based control measures, such as cancellation of public events and closure of schools, depending on the extent of the outbreak and the availability of resources.
- Establish the infrastructure to deliver essential goods and services to persons in quarantine and isolation.

I. Rationale and Goals

Community containment strategies, including isolation and quarantine, are fundamental measures that have been used for centuries to control the spread of communicable diseases. Before 2003, quarantine had been used rarely in the last century, due in part to the negative connotations associated with past use. Modern quarantine differs substantially from the quarantine of the past and proved to be critically important for the containment of the 2003 global SARS outbreaks.

Isolation of SARS patients separates them from healthy persons and restricts their movement to prevent transmission to others. It also allows for the focused delivery of specialized health care to ill persons and protects healthy persons from becoming ill. Quarantine of persons who may have been exposed to SARS but are not ill is intended to identify those at greatest risk for developing SARS and to prevent transmission in the event that they develop SARS (see Box).

Quarantine of exposed contacts can have added benefits beyond the obvious purpose of separating exposed persons from unexposed persons. The first benefit, reducing the risk of further transmission from infected persons who appear healthy, applies to infectious diseases (e.g., measles) in which transmission can occur before the onset of symptoms. This is currently not believed to be the case with SARS. A second, frequently under-appreciated benefit, is a reduction in the interval between the onset of symptoms and the institution of appropriate precautions to prevent transmission. From a practical perspective, several steps need to occur during this period (e.g., recognition of symptoms, presentation to a healthcare provider, establishment of a SARS diagnosis) before appropriate isolation precautions are instituted. The utility of quarantine in this context is to identify through contact tracing those at greatest risk for the onset of SARS symptoms, separate them from others and restrict their movements, actively monitor them for symptoms, and institute appropriate isolation procedures as soon as symptoms are detected. In this way, quarantine reduces both the period of risk of transmission and the number of persons exposed.

Isolation and quarantine are optimally performed on a voluntary basis, but many levels of government (local, state, federal) have the basic legal authority to compel mandatory isolation and quarantine of persons and communities to protect the public's health (see Supplement A). Broader community containment measures, such as cancellation of public gatherings, implementation of community "snow days," institution of temperature monitoring in public places, and use of masks, may also reduce SARS-CoV transmission by limiting social interactions at the population level and preventing inadvertent SARS exposures. The goals of these measures are to:

- Reduce the risk of transmission of infection at the community level from SARS patients and from persons who have been exposed to infectious SARS patients but are not yet ill.
- Reduce the overall risk of transmission of SARS-CoV at the population level when transmission is occurring in the community

II. Lessons Learned

During the 2003 outbreak in the United States, the community containment strategy consisted mainly of coordinating SARS response activities through CDC's Director's Emergency Operations Center and providing information and education to the public,

healthcare workers, and others. This included issuing guidelines and fact sheets, holding press conferences, and meeting with groups and communities that were experiencing stigmatization. CDC also recommended isolation of SARS patients until they were no longer infectious. This practice allowed patients to receive appropriate care, and it helped contain the spread of illness to healthcare workers and other patients. Those who were severely ill were cared for in hospitals. Those whose illnesses were mild were cared for at home. Sick persons being cared for at home were asked to avoid contact with other persons and to remain at home until 10 days after the resolution of fever, provided respiratory symptoms were absent or improving. In the United States, where there was little or no transmission of SARS-CoV, individual or population-based quarantine was not recommended. CDC advised persons who were exposed but not symptomatic to monitor themselves for symptoms and advised home isolation and medical evaluation if symptoms appeared.

In contrast, other countries, many of whom were much more severely affected, implemented both individual and population-based or geographic quarantine measures, including quarantine of travelers arriving from other SARS-affected areas, of work and school contacts, and, in some cases, of entire apartment complexes or areas of a city. Other community-based strategies used in other countries for controlling and preventing SARS transmission included: 1) requiring fever screening before entry to schools, work sites, and other public buildings, 2) requiring use of face masks in certain settings, such as public transportation systems, 3) implementing population-wide temperature monitoring and SARS fever hotlines and referrals services, and 4) implementing community-level disinfection strategies.

Large-scale quarantine was used for the first time in decades in several countries that were severely affected by the SARS outbreak in 2003. The impact and effectiveness of individual community-based isolation and quarantine measures and specific community- and population-level interventions undertaken to contain the SARS epidemic globally are not yet fully understood, but some important generalizations can be made. Overall, strategies associated with timely and successful control of local outbreaks were characterized by 1) rapid responses, and 2) early and aggressive use of movement restrictions and other interventions. Other lessons learned from this modern experience with community containment include:

- Most, but not all, SARS patients have a clear history of exposure to another patient or to a specific setting with recognized SARS-CoV transmission.
- Strict infection control measures are needed for isolation of SARS patients; these may be difficult to implement in household and community settings.
- Tracing and monitoring of contacts of SARS patients is resource intensive but critical to the containment and early recognition of illness in persons at greatest risk.
- Quarantine was an integral part of SARS control in some settings with extensive transmission.
- A variety of quarantine strategies (e.g., home quarantine, work quarantine) have been used, depending on specific needs.
- Isolation and quarantine raise legal, social, financial, and logistic challenges (e.g., provision of services, prevention of stigma) that should be anticipated and addressed.
- Quarantine does not have to be mandatory, and compliance does not have to be 100% to be effective.

- Effective implementation of quarantine requires a clear understanding of the roles and legal authorities of public health staff at local, state, and federal levels.
- Effective implementation of quarantine requires identification of appropriate traditional and non-traditional partners (e.g., law enforcement) and their engagement in coordinated planning and response.
- The financial, social, and psychological impact of quarantine measures is substantial; preparedness planning should include measures to reduce this impact.
- Obtaining and maintaining public trust is key to successful implementation of these measures. Clear messages about the criteria, justification, role, and duration of quarantine and ways in which persons will be supported during the quarantine period will help generate public trust.
- Community control measures such as cancellation of public events and other "snow day"-type measures may reduce the risk of exposure to SARS at the population level by limiting social interactions.

Isolation and Quarantine

Isolation is the separation and restriction and movement or activities of ill infected persons who have a contagious disease, for the purpose of preventing transmission to others.

- Isolation allows for the focused delivery of specialized health care to persons who are ill, and it protects healthy persons from becoming ill.
- Ill persons are usually isolated in a hospital, but they may also be isolated at home or in a designated community-based facility, depending on their medical needs.
- "Isolation" is typically used to refer to actions performed at the level of the individual patient.

Quarantine is the separation and restriction of movement or activities of persons who are not ill but who are believed to have been exposed to infection, for the purpose of preventing transmission of diseases.

- Persons are usually quarantined in their homes, but they may also be quarantined in community-based facilities.
- Quarantine can be applied to an individual or to a group of persons who are exposed at a large public gathering or to persons believed exposed on a conveyance during to international travel.
- Quarantine can also be applied on a wider population- or geographic-level basis. Examples of this application include the closing of local or community borders or erection of a barrier around a geographic area ("cordon sanitaire") with strict enforcement to prohibit movement into and out of the area.

Isolation and quarantine are optimally performed on a voluntary basis, per instructions of healthcare providers and health officials. However, many levels of government (local, state, federal) have the basic legal authority to compel mandatory isolation and quarantine of individuals and communities when necessary to protect the public's health.

III. Isolation of SARS Patients

Objective: Ensure appropriate separation and confinement of patients with SARS during the period of communicability.

Preventing transmission from possible or known cases is critical to controlling SARS. Accomplishing this requires limiting the public interactions of possible or known SARS patients (e.g., work, school, out-of-home child care) and preventing transmission wherever the patients are housed during the period of infectivity (10 days after the resolution of fever, provided respiratory symptoms are absent or improving). SARS patients should be admitted to a healthcare facility for isolation only if clinically indicated or if isolation at home or other community facility cannot be achieved safely and effectively. Although isolation of a limited number of SARS patients may be initially accomplished in a hospital setting, local and state authorities should be prepared in the event of large outbreaks to isolate patients and potentially infected contacts at home or in alternative facilities designated for this purpose**. Isolation of SARS patients in hospitals is described in detail in Supplement C**. The following measures are recommended for isolation of SARS patients in residential settings or in alternative care facilities in the community.

Basic Activities: Isolation of SARS patients at home

- Before a SARS patient occupies a residence for home isolation, the residence should be inspected. The purpose of the inspection is to: 1) ensure that the residence has the features necessary for provision of appropriate care to the patient, and 2) determine if sufficient infection control measures can be established to keep household members and the community at minimal risk of exposure. The designated primary caregiver should conduct the on-site inspection.
- A residence should meet the following minimum requirements for home isolation of a SARS patient:
  - Availability of a primary caregiver to assist the patient with basic needs
  - Functioning telephone, electricity, and potable water
  - Separate bedroom that will be occupied only by the SARS patient during the isolation period. The bedroom should have a floor-to-ceiling wall with a door that can be kept closed at all times and a means for isolating a central air-conditioning unit that serves this room.
  - Accessible separate bathroom that is designated for use only by the SARS patient
- During the period of isolation, household members not providing care should be relocated if possible so that only the primary caregiver and the patient remain in the residence.
- If relocation of household members is not possible, their contact with the SARS patient should be minimized. Persons at risk of serious SARS complications (e.g., persons with underlying heart or lung disease, persons with diabetes mellitus, elderly persons) should not have contact with the patient.

- All persons in contact with the SARS patient should be provided with adequate PPE and instructions for use. Ensure that they understand and adhere to appropriate infection control practices.
- All persons in contact with the SARS patient should carefully follow recommendations for hand hygiene, particularly after contact with body fluids (e.g., respiratory secretions, urine, feces). See the "Guideline for Hand Hygiene in HealthCare Settings" (http://www.cdc.gov/handhygiene/) for more details.
- If possible, a SARS patient should wear a surgical mask during close contact with uninfected persons to prevent the spread of infectious droplets. When a SARS patient is unable to wear a surgical mask, household members should wear surgical masks when in close contact with the patient.
- Household waste soiled with body fluids of SARS patients, including facial tissues and surgical masks, may be discarded as normal waste.
- Household members and other close contacts of SARS patients should be vigilant for fever (i.e., measure temperature twice daily) and respiratory symptoms; if these develop, they should seek medical attention immediately.

Enhanced Activities: Isolation of SARS patients in designated facilities in the community

If a surge in patients overwhelms existing healthcare capacity or if home isolation is not feasible for individual patients, jurisdictions might need to use alternative facilities in the community for isolation of SARS patients. SARS preparedness planning must address the availability and use of existing or temporary structures, the management of patients housed in these facilities, and resources for needed supplies and services.

- Assemble a team to identify appropriate locations and resources for community SARS isolation facilities, establish procedures for activating them, and coordinate activities related to patient management.
- Consider these criteria in selecting a location for the facility:
  - Sufficient space to house a temporary structure (e.g., section of a hospital parking lot)
  - Sufficient potable water and electricity
  - Space for ancillary equipment and services (e.g., exhaust fans, support housing, security)
  - Access for vehicles
- Consider the use of both existing and temporary structures. Options for existing structures include: community health centers, nursing homes, apartments, schools, dormitories, and hotels. Options for temporary structures include: trailers, barracks, tents, or "bubble systems."
- To determine priorities among available facilities, consider these features:
  - Separate rooms for patients, or areas amenable to isolation of patients with minimal construction
  - Independent ventilation for each room or isolation area
  - Feasibility of modifying existing infrastructure as need for engineering controls
  - Feasibility of controlling access to the facility and to each room
  - Availability of potable water, bathroom, and shower facilities

- Facilities for patient evaluation, treatment, and monitoring
- Capacity for providing basic needs to patients
- Rooms and corridors that are amenable to disinfection
- Facilities for accommodating staff
- Facilities for collecting, disinfecting, and disposing of infectious waste
- Facilities for collecting and laundering infectious linens and clothing
- Ease of access for delivery of patients and supplies
- Legal/property considerations

- Additional considerations include:
  - Staffing and administrative support
  - Training required to use the facility
  - Ventilation and other engineering controls
  - Ability to support appropriate infection control measures
  - Availability of food services and supplies
  - Ability to provide an environment that supports the social and psychological well-being of patients
  - Ability to provide appropriate security and access control
  - Ability to support appropriate medical care, including emergency procedures
  - Access to communication systems that allow for dependable communication within and outside the facility
  - Ability to adequately monitor the health status of facility staff

IV. Management of Contacts of SARS Cases

Objective: To monitor and evaluate contacts of SARS cases to ensure early identification of illness and rapid institution of infection control precautions to prevent further spread.

Basic Activities

In a limited SARS outbreak, contacts of SARS cases may be managed through either active or passive monitoring alone and without any restriction of movement unless they develop symptoms of disease. Consideration should be given to confining and/or restricting the movement of contacts with high-risk exposures (e.g., healthcare workers involved in an aerosol-generating procedures on a SARS patient) even in the absence of symptoms (see Enhanced Activities below). Contacts of SARS cases should be contacted regularly by the health department and advised to:

- Be vigilant for fever (i.e., measure temperature twice daily) or respiratory symptoms for a 10-day period after exposure.
- Seek healthcare evaluation immediately if they develop symptoms.
- Inform a healthcare provider in advance of presenting at a healthcare facility that they may have been exposed to SARS.

Enhanced Activities

In the event of a large SARS outbreak or high-risk exposure, application of quarantine should be considered as a means of interrupting transmission. The purpose of quarantine of contacts is to reduce transmission by separating them from others, monitoring them for signs and symptoms, and instituting appropriate infection control precautions as soon as symptoms are detected. Frequent monitoring (e.g., twice a day) ensures that the period between

symptom onset and institution of precautions is minimized, and separation ensures that the number of persons exposed during that period is also minimized.

Quarantine can be complicated and resource intensive for public health officials to implement, and it can be inconvenient or even quite difficult for quarantined persons to endure. Decisions about quarantine must strike a balance based on the epidemiologic situation and available resources. Efforts to identify high-risk contacts and tailor the approach for quarantine may take more work up front but may reduce the resources needed for monitoring and maintenance of quarantine. On the other hand, focusing too narrowly may result in missing more cases. In some cases, limited resources for contact tracing may make it more feasible to apply quarantine more broadly. Resources for contact monitoring and management for the additional contacts must then be ensured.

Options for quarantine

Quarantine represents a range of possible interventions that may be applied at the individual, small group, or even community levels (community levels described below). Quarantine is usually used for:

- Individuals with close contact (e.g., household contacts of a person with SARS)
- Small groups with close contact (e.g., coworkers, healthcare workers with unprotected exposure)
- Larger groups with unspecified extent of exposures (e.g., social groups, congregate settings, passengers on conveyances)
- Communities in which the level of exposure for individuals is not known but interventions are needed to control potential population exposure by increasing social distance and limiting interactions and movement within a community

Types of quarantine

- Home quarantine -- Quarantine at home is most suitable for contacts who have a home environment in which their basic needs will be met and where protection of unexposed household members is feasible.
- Quarantine in designated facilities -- Contacts who do not have an appropriate home environment for quarantine or contacts who do not wish to be quarantined at home may be quarantined in specific facilities designated for this purpose.
- Work quarantine – This applies to healthcare workers or other essential personnel who have been exposed to SARS patients and who may need to continue working (with appropriate infection control precautions) but who are quarantined either at home or in a designated facility during off-duty hours.

Home quarantine

Certain minimum criteria must be met to enable optimal implementation of home quarantine:

- Access to educational materials about SARS and quarantine
- Ability to monitor one's own symptoms (or have them monitored by a parent or guardian)

- Basic utilities (water, electricity, garbage collection, and heating and air-conditioning as appropriate)
- Basic supplies (clothing, food, hand hygiene supplies, laundry services)
- Mechanisms for addressing special needs (e.g., filling prescriptions)
- Mechanism for communication, including telephone (for monitoring by health staff, reporting of symptoms, and accessing support services)
- Accessibility to healthcare workers or ambulance personnel
- Access to food and food preparation
- Access to supplies such as thermometers, fever logs, phone numbers for reporting symptoms or accessing services, and emergency numbers (these can be supplied by health authorities if necessary)
- Mental health and other psychological support services

Management of household members of contacts in home quarantine

- No specific precautions are needed for household members of contacts in home quarantine as long as the person under quarantine remains asymptomatic. If the contact develops symptoms, s/he should immediately notify medical/public health authorities to obtain medical evaluation. Standard precautions described for SARS patients in home isolation should be followed.
- Household members can go to school, work, etc., without restrictions unless the quarantined person develops symptoms. If the quarantined person develops symptoms, household members should remain at home and contact public health authorities for instructions.
- Household members can provide valuable support to quarantined persons by helping them feel less isolated and ensuring that essential needs are met.

Monitoring and support of persons under quarantine

- Monitor daily, or more frequently if feasible, for fever and any respiratory symptoms.
- Monitor compliance with quarantine through daily visits or telephone calls.
- Provide a hotline number for quarantined persons to call if they develop symptoms or have other immediate needs.
- If a quarantined person develops symptoms suggestive of SARS, arrangements should be made for immediate medical evaluation of the patient. The patient should be asked to follow standard precautions for SARS patients in home isolation until an evaluation is performed.
- Quarantined persons may need a variety of support services. These might include:
  - Psychological support
  - Essential services (food, supplies, other basic needs).
  - Care for family members.
  - Economic assistance

V. Community-Based Control Measures

Objective: Reduce the risk of transmission of SARS-CoV at the population level by limiting social interactions or preventing inadvertent exposures.

Community-based control measures are designed to reduce the risk of SARS at the population level by either decreasing social interactions (e.g., canceling public events, scaling back public transit schedules, implementing community "snow days") or by implementing mass measures that might prevent inadvertent SARS exposures (e.g., temperature monitoring in public places; use of masks). It should be noted, however, that the effectiveness of these mass measures has not been completed evaluated. The decision to institute community containment measures and the nature and scope of the measures should be decided based on the extent of the outbreak and the availability of resources. Factors to consider in determining thresholds for community action include:

- Number of cases and contacts
- Characteristics of local transmission
  - Extent of spread
  - Whether source is known
  - Generations of transmission
  - Rapidity of spread
- Exposure categories for cases and contacts
  - Travel
  - Healthcare worker
  - Household
  - Other
  - Unlinked
- Morbidity and mortality
- Movement into or out of the community
- Local healthcare and public health resources
- Level of public cooperation and trust vs. risk of public panic

Basic Activities

- Provide community information and education about SARS, its spread, and how to prevent spread
- Promote "respiratory hygiene" and handwashing.

Enhanced Activities

- "Snow days" or "shelter in place"
- Suspension of public gatherings
- Temperature monitoring in public buildings and places
- Recommended or mandatory mask use
- Closing of public buildings and spaces
- Cancellation of events
- Closing of non-essential government functions (public libraries, DMV)
- Request voluntary or mandate closing of businesses and institutions (e.g., schools)
- Curfews
- Restrictions on travel (air, rail, water, motor, pedestrian)
- Closing or scaling back of mass transit
- Geographic or population-based movement restrictions

Logistical Considerations

Implementation of community containment measures on a large scale requires jurisdictions to address enormous logistic, economic, ethical, and psychological challenges. These challenges include:

- Provision of essential services and support
  - Food
  - Supplies
  - Medical attention
  - Caretaking
  - Continuation of work/school (telecommuting; home-based curricula)
  - Financial issues
- Mental health
  - Stigma management
  - Psychological support
- Enforcement
  - Closure of borders
  - Border surveillance/monitoring (SARS checkpoints)
  - Travel permits and credentialing

VI. Roles and Responsibilities

Historical precedents, both legal and practical, suggest that states have primary authority to invoke and enforce quarantine in their own jurisdictions. This authority derives from the states' "police power," i.e., the inherent authority of a government to enact laws and promote regulations to safeguard the health and welfare of its citizens. As a result of this authority, the individual states are responsible for intrastate isolation and quarantine practices and conduct their activities in accord with their respective statutes. Of note, quarantine is not the only public health action that can be compelled by state health authorities. Others include school immunization laws and TB treatment laws.

Current quarantine laws, regulations, and enforcement procedures vary widely from state to state, as do state-level lists of notifiable and quarantinable diseases. Many of these laws date back to the nineteenth century. In response to a request from CDC, the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities has developed a "Model State Emergency Health Powers Act" to assist state governments in reviewing quarantine laws to ensure they are adequate to respond to modern disease and bioterrorism concerns (http://www.publichealthlaw.net/MSEHPA/MSEHPA2.pdf).

At the federal level, the HHS Secretary has statutory responsibility for preventing the introduction, transmission, and spread of communicable diseases from foreign countries into the United States, e.g., at international ports of arrival, and from one state or possession to another. The communicable diseases for which federal isolation and quarantine are authorized are set forth through executive order of the President. A new executive order was recently issued adding SARS to the list of detainable communicable diseases. By statute, the HHS Secretary may accept state and local assistance in the enforcement of federal quarantine regulations and may also assist state and local officials in the control of communicable diseases. For more information on legal authorities, and a checklist on legal considerations for SARS Preparedness, see Appendices D-4 and D-5.

VII. Enforcement of Community Containment Measures

Data from modeling studies suggest that community containment measures such as quarantine are effective for controlling an outbreak even if compliance is less than perfect. Optimally, quarantine applied on a voluntary basis will afford sufficient compliance to attain the necessary effect. Nevertheless, protocols must be established for enforcement of both individual and community measures when higher levels of compliance are required.

For enforcement of individual quarantine restrictions, protocols should be developed for follow-up of persons who cannot be reached by phone. Such protocols might include a threshold period for non-responsiveness that should trigger a home visit or other means to locate the individual. Partnerships with law enforcement and other community-based officials will be helpful in tracing the whereabouts of persons who have violated restrictions. Alternative arrangements should be available for those who cannot or will not comply with voluntary home-based quarantine. These might include:

- Issuance of official, legally binding quarantine orders
- Posting a guard outside the home
- Use of electronic forms of monitoring
- Use of detention facilities

Enforcement of community-wide containment measures is necessarily more complex given the larger number of persons involved. Although some measures, such as canceling of public events or scaling back of mass transit services, are self-enforcing, others (e.g., restrictions on travel between areas) might require use of physical measures such as barricades or roadblocks. Implementation of such measures requires close partnership and cooperation with law enforcement at the local and state levels. In more extreme situations, federal law enforcement resources may also be required.

VIII. Preparedness Planning

A checklist for preparedness planning for community containment measures is provided in Appendix D6.

List of Appendices for Supplement D

Appendix D1
Community Containment Matrices
Appendix D2
Interim Guidance on Infection Control Precautions for Patients with Suspected Severe Acute Respiratory Syndrome (SARS) and Close Contacts in Households
Appendix D3
Information for SARS Patients and Their Close Contacts
Appendix D4
Fact Sheet on Legal Authorities for Isolation/Quarantine
Appendix D5
Threshold Determinants for the Use of Community Containment Measures
Appendix D6
Preparedness Checklist for Community Containment Measures

Appendix D1
Community Containment Matrices

Matrix 1: Community Management of Cases and Contacts

Level of SARS activity	Suggested actions
SARS activity worldwide, but only imported cases	1) Responsibility/authority/general considerations • Health department responsibility o Contact tracing o Coordination of orders for activity restrictions • CDC responsibility o Coordination of notification to health department for contacts associated with conveyances • Other considerations o Enforcement of activity restrictions may require fines, penalties, guard, or relocation to guarded facility. o Financial support may be needed for persons in quarantine/isolation. 2) Location of isolation/quarantine • Healthcare facility, home, or alternate care facility, depending on need and availability. • As numbers increase, community-based alternate care facility(ies) may be required. 3) Management of asymptomatic contacts • Monitoring and quarantine (when used) preferred voluntary; may be compulsory if noncompliant. • Quarantine generally not required unless deemed appropriate/necessary by circumstances and/or resources. • Passive or active daily monitoring (as resources allow) for clinical status; persons who develop symptoms should be isolated and evaluated per guidelines. • May be housed as cohorts, if rapid isolation can be ensured for persons who develop symptoms. • Activity/movement restrictions as indicated; avoid entry to high-risk settings (e.g., hospitals).
SARS activity in U.S. and community, with extensive transmission and effective control measures	1) Responsibility/authority/general considerations • Prioritize contact tracing based on risk and patterns of transmission • As number of cases and contacts increases, law enforcement and other community resources may be needed. 2) Location of isolation/quarantine • Healthcare facility, home, or alternate care facility, depending on need and availability. • Establish appropriate non-hospital alternative care facility(ies). 3) Management of asymptomatic contacts • Reevaluate/consider enhanced movement restrictions and quarantine measures. • Active daily monitoring for clinical status and

	compliance with activity restrictions. • Daily review of symptom/temperature logs for all under quarantine.
SARS activity in U.S. and community, with extensive transmission and ineffective control measures	1) Responsibility/authority/general considerations • Number of cases and contacts may make contact tracing impractical. When attempted, prioritize based on risk and patterns of transmission. 2) Location of isolation/quarantine • Healthcare facility, home, or alternate care facility, depending on need and availability. • Establish designated healthcare facilities for ill cases. 3) Management of asymptomatic contacts • Quarantine, voluntary or mandatory. • Active daily monitoring for clinical status and compliance with activity restrictions. • Daily review of symptom/temperature logs for all under quarantine.
SARS transmission controlled/eliminated; no new cases reported	• Daily monitoring for clinical status and compliance with activity restrictions (if any), with daily review of symptom/temperature log for all under quarantine. • Discontinue contact monitoring measures after duration of incubation period. • Discontinue isolation/quarantine measures at the conclusion of three incubation periods after the last reported case. • Discontinue maintenance of designated facilities at the conclusion of three incubation periods after the last reported case. • Discontinue enforcement measures at time of discontinuation of other isolation/quarantine interventions.

Matrix 2: Community Containment Measures

Level of SARS activity	Suggested actions
SARS activity worldwide, but only imported cases	• No community-wide control measures required. • Hospitals and other high-risk sites should screen persons on entry.
SARS activity in U.S. and community, with extensive transmission and effective control measures	• Consider measures such as: o Fever/symptoms monitoring before public gatherings or entrance to public places o Community-wide "shelter in place" or "snow day" strategies o Community-wide triage system for persons with fever (e.g., call centers to screen outpatients before office presentation, fever evaluation centers, triage to designated centers) o Cancellation of public events o Closing of public places and schools o Restriction of mass transit o Distribution of products/education materials on hand hygiene o Distribution/use of masks for selected essential personnel • Disseminate information (in appropriate languages) on restrictions in the quarantine zone (e.g, print/broadcast media; posters, leaflets, flyers, door-to-door). • Disseminate information on quarantine rationale, procedures, restrictions to neighboring zones/communities. • Persons in quarantine may require financial support; mental health support. • Health department should coordinate orders for community-wide restrictions. • Enforcement may require fines, penalties, barricades, visible signs of boundary enforcement. • Identify alternative means of supplying essential services; provide focused and community-wide reassurance re: restoration of these services.
SARS activity in U.S. and community, with extensive transmission and ineffective control measures	• Initiate measures such as: o Fever/symptoms monitoring before public gatherings or entrance to public places o Mandatory community-wide "shelter in place" or "snow day" strategies o Community-wide triage system for persons with fever (e.g., call centers to screen outpatients before office presentation, fever evaluation centers, triage to designated centers) o Cancellation of public events o Closing of public places and schools o Restriction of mass transit as necessary o Restriction of access routes o Distribution and use of masks • Minimize movements into quarantined areas by use of monitoring checkpoints, curfews, travel permits, health certificates. • Disseminate information (in appropriate languages) on

	restrictions to all persons in quarantine zone; may require use of print/broadcast media; posters, leaflets, flyers; door-to-door visitation. • Disseminate information on quarantine rationale, procedures, restrictions to neighboring zones/communities. • Establish cooperative arrangements with neighboring zones/communities to prevent movement into or out of quarantine zone. • Clearly define who may enter quarantine zone. • Persons in quarantine may require financial support; mental health support. • Identify alternative means of supplying essential services; provide focused and community-wide reassurance re: restoration of these services. • Health department should coordinate orders for community-wide restrictions; enforcement may require fines, penalties, barricades, visible signs of boundary enforcement, credentialing and movement permits, visible presence of law enforcement officials.
SARS transmission controlled/eliminated; no new cases reported	• Discontinue isolation/quarantine measures at the conclusion of three incubation periods after the last reported case. • Discontinue maintenance of designated facilities at the conclusion of three incubation periods after the last reported case. • Discontinue enforcement measures at time of discontinuation of other isolation/quarantine interventions.

Appendix D2
Interim Guidance on Infection Control Precautions for Patients with SARS and Close Contacts in Households

Appendix D3
Information for SARS Patients and Their Close Contacts

Appendix D4
Fact Sheet on Legal Authorities for Isolation/Quarantine

Appendix D5
Threshold Determinants for Use of Community Containment Measures

Parameter	Variable
Epidemiologic parameters of the outbreak	Absolute number of cases
	Rate of incident cases
	Number of hospitalized cases
	Number and percent of cases with no identified epidemiologic link
	Morbidity (including disease severity) and mortality
	Number of contacts under surveillance and/or quarantine
Healthcare resources	Hospital/facility bed capacity
	Isolation/negative pressure room capacity
	Staff resources
	Patient/staff ratio
	Number of isolated or quarantined staff
	Availability of specifically trained specialists and ancillary staff
Equipment and supplies	Availability of ventilators
	Availability of other respiratory equipment
	Availability of personal protective equipment and other measures
	Availability of therapeutic medications (SARS and non-SARS specific)
Public health resources	Investigator to case and contact ratios
	Number of contacts under active surveillance
	Number of contacts under quarantine
	Ability to rapidly trace contacts (number of untraced/interviewed contacts)
	Ability to implement and monitor quarantine (staff to contact ratio)
	Ability to provide essential services (food, water, etc.)
Community cooperation, mobility and unrest	Degree of compliance with voluntary individual isolation
	Degree of compliance with active surveillance and voluntary individual quarantine
	Degree of movement out of the community
	Degree of community unrest, i.e. protesting, riots, looting, etc.

Appendix D6
Preparedness Checklist for Community Containment

General

- ❑ Establish an incident command structure that can be used for SARS response
- ❑ Establish a legal preparedness plan
- ❑ Establish relationships with essential partners, such as law enforcement, first responders, healthcare facilities, and the legal community.
- ❑ Plan for monitoring and assessing factors that determine types and levels of response, including the epidemiologic profile of the outbreak, available local resources, and level of public acceptance and participation
- ❑ Develop message strategies for the public, government decision makers, healthcare and emergency response providers, and the law enforcement community.

Management of cases and contacts (including quarantine)

- ❑ Develop protocols, tools, and databases for
  - o Case surveillance
  - o Clinical evaluation and management
  - o Contact tracing, monitoring, and management
  - o Reporting criteria
- ❑ Develop standards and tools for home and non-hospital isolation and quarantine
- ❑ Establish supplies for non-hospital management of cases and contacts
- ❑ Establish a telecommunications plan for "hotlines" or other services for
  - o Case and contact monitoring and response
  - o Fever triage
  - o Public information
  - o Provider information
- ❑ Plan to ensure provision of essential services and supplies to those in isolation and quarantine, including:
  - o Food and water
  - o Shelter
  - o Medicines and medical consultations
  - o Mental health and psychological support services
  - o Other supportive services, i.e. day care, etc.
  - o Transportation to medical treatment, if required
- ❑ Plan to address issues of compensation, job security, and prevention of stigmatization

Non-hospital-based isolation of cases

- ❑ Identify appropriate community-based facilities for isolation of cases without substantial health care requirements
- ❑ Develop policies related to use of these facilities
- ❑ Identify facilities for persons for whom home isolation is indicated but who do not have an appropriate home setting, such as travelers and homeless populations.
- ❑ Ensure that required procedures for assessment of potential isolation or quarantine sites are available and up to date.

Community containment measures

- ❑ Ensure that legal authorities and procedures are in place to implement the various levels of movement restrictions as necessary
- ❑ Identify key partners and personnel for the implementation of movement restrictions, including quarantine, and provision of essential services and supplies:
  - o Law enforcement
  - o First responders
  - o Other government service workers
  - o Utilities
  - o Transportation industry
  - o Local businesses
  - o Schools and school boards
- ❑ Develop training programs and drills
- ❑ Ensure fit-testing and training in PPE for all identified responders and providers as necessary
- ❑ Develop plans for mobilization and deployment of public health and other community service personnel